Restricted Circulation

This paper is not an official document; it is for information only and reference cannot be made to it in any printed publication without the permission of the author.

AGRICULTURAL MEMORANDUM 553

DR M HOUGH

Mean July air temperature - a criterion for deciding whether maize should be taken for grain or silage.

Farm experience has shown that 60% dry matter content in the grain is the minimum value for which it is possible to harvest the maize crop as grain. The final dry matter content is not usually known until October and in cool summers a decision has to be made between taking a silage crop or waiting until November or December in the hope of harvesting grain.

Some attempts have therefore been made to relate percentage dry matter content in the grain, measured in trials for INRA 200 at Wytham, Oxford, to weather factors with results as follows:

N.B. In all regressions D is percentrage dry matter in the grain, and X is the independent variable. There are 11 sets of D and X in each case.

Potential Transpiration.

1). July to September accumulated potential transpiration.

$D = 4.82 X + 19.44$ ($r = 0.64$). X in inches.

2). May to October accumulated potential transpiration.

$D = 4.38 X - 10.48$ ($r = 0.74$). X in inches.

Temperature.

1). Mean July air temperature.

$D = 5.09 X - 23.57$ ($r = 0.84$). X in ^{o}C

August and September mean air temperatures by themselves gave poorer correlations than July.

2). Mean July to September air temperature.

$D = 7.89 X - 64.58$ ($r = 0.92$). X in ^{o}C

Points to Note.

1). The correlations for transpiration are lower than those for temperature.

2). Conditions during July are shown to be important. This may be related to the date of flowering, or to the persistence of temperature during late summer i.e. a cool July is likely to be followed by a cool August. Another

possibility relates to the accumulation of dry matter reserves in the stem.

3). Some idea of the chances for grain can be made at the end of July. According to the regression if the mean July air temperature is below 16.4°C, then it may be advisable to plan for a silage crop. However, the temperatures used in these regressions were measured at the Radcliffe Observatory, Oxford, which is known to be affected by its urban setting. For rural areas the critical temperature is probably about 16.0°C.

Any comments or criticisms should be sent direct to the author.

Met O 8a
Meteorological Office
London Road
Bracknell
Berks

May 1973